

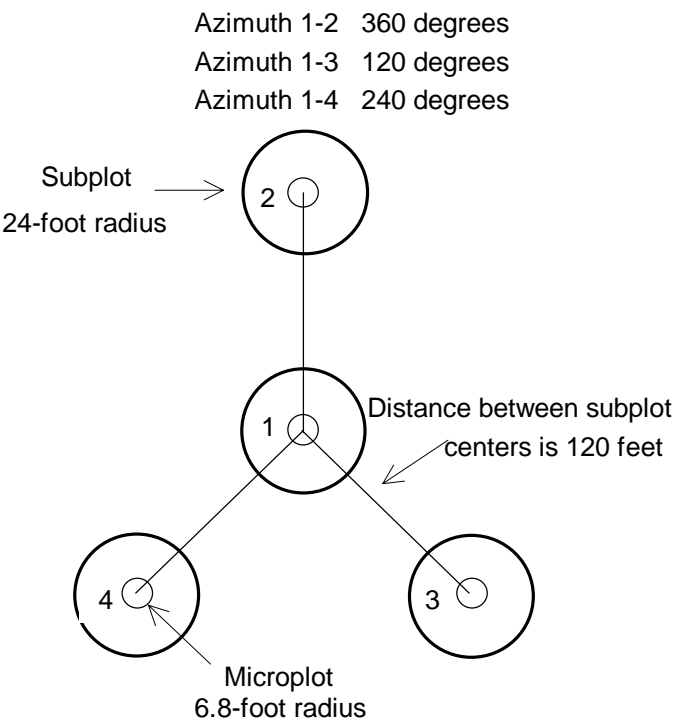
SUPPLEMENT A

SOUTHERN STATION FIXED RADIUS SUBPLOT DESIGN AND MICROPLOT REMEASUREMENT PROCEDURES

REVIEW OF FIELD SAMPLING IN PREVIOUS INVENTORY

This section is an overview of the previous subplot design installed by the Southern Station in AL, AR, GA, KY, LA, NC, SC, TN, and VA.

PLOT LAYOUT



LAND USE

The size requirements of the land use definitions have not changed – 120 ft wide and 1.0 acre in size, except for urban land uses which still can be any size or width.

However, the land use boundaries have changed. In the past inventory, developed nonforest conditions, (i.e. improved roads, rights-of-ways, etc.) were considered forest boundaries regardless of width.

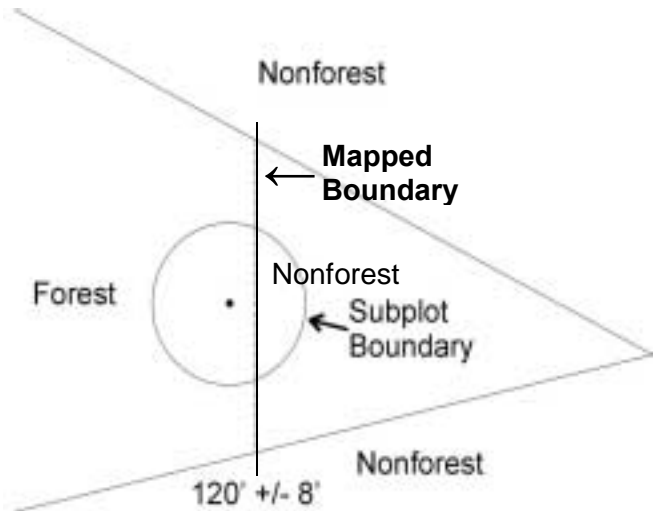
In the current inventory, the same rules for SIZE OF CONTIGUOUS FOREST LAND boundaries, now apply to LAND USE as well: only nonforest entities greater than 120 ft wide are considered forest boundaries. For example, an improved road that is 60 feet wide does not stop the forest land use from crossing the road and capturing the adjacent forest on the other side, even though the improved road is considered as a nonforest condition. Therefore, land that was recorded as nonforest at the last inventory may now meet the definition of forest land.

CONDITION DELINEATION

In the previous subplot design, an accessible forest condition that was as narrow as 30 ft wide could be delineated as a separate condition. In the current inventory, the forest condition must be 120 ft in order to delineate it as a separate accessible forest land condition.

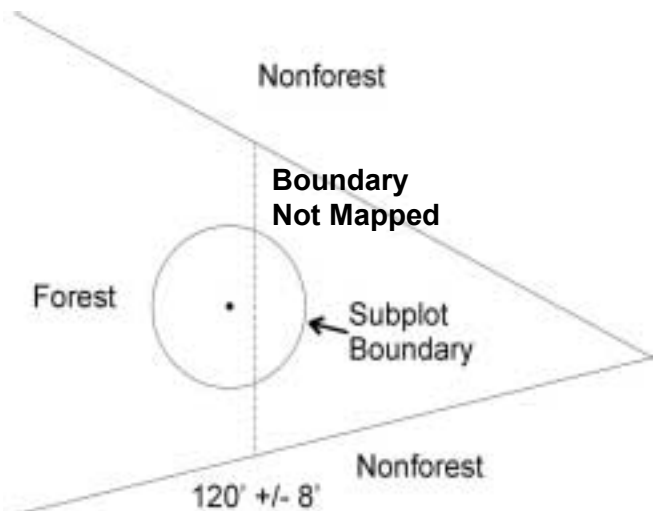
When delineating forest land and nonforest land, the past procedures required that a reference boundary be identified, and the condition delineated when the subplot straddled an area that was less than 120 ft wide. For example, a subplot fell in an area that was completely wooded, but a portion of the wooded area was less than 120 ft wide and surrounded by nonforest land. The portion that was less than 120 ft was recorded as a nonforest condition and the subplot was mapped (see Figure 35 below).

Figure 36. Forest condition narrowed within a nonforest condition. In the past survey, the line representing the 120' boundary was mapped, and the area to the right of the line was considered to be part of the Nonforest condition surrounding it. Only the trees that fell on to the left of the boundary were tallied.



In the current inventory, the entire subplot will be considered to be forest or nonforest, depending on where subplot center lands on the ground. If the subplot center samples the area that is greater than 120 ft wide, then the whole subplot is considered to be part of that condition. If the subplot center samples the area that is less than 120 ft wide, then the whole subplot is considered to be part of that condition (see Figure 5 below, and Section 2.3.1)

Figure 5. Forest condition narrows within a nonforest condition. Examine the location of the subplot center in reference to the approximate line where the forest narrows to 120 ft wide. In this example, the entire subplot is classified as forest.



PREVIOUS DIAMETER PROCEDURES

DBH on a tree that had an abnormality at 4.5, was estimated by averaging the diameter above and below the abnormality and recording VALID DBH = 1. The current procedure is to take the diameter immediately above the abnormality at the point where it ceases to affect normal stem form. The length to DBH is also recorded. All other DBH procedures have not changed since the previous inventory.

CO-LOCATED MICROPLOT REMEASUREMENT PROCEDURES

This section describes the tree level variables that are recorded when remeasuring the co-located microplot on the Southern FIA unit's fixed radius subplot design. Only account for the saplings recorded at the last inventory, missed saplings, and through growth trees. Do not tally any new ingrowth saplings.

NO HISTORY

For stems that are not presently in the sample, either due to previous cruiser error or due to definitional or procedural change, denied access, inaccessible/hazardous conditions, or a lost microplot, retain the same TREE RECORD NUMBER, then do the following:

- record CO-LOCATED MICROPLOT TREE STATUS = 0
- record the required items listed below in this supplement

LIVE STEMS

For live saplings on the co-located microplot that were recorded as saplings at the previous inventory and are currently still less than 5.0 inches DBH:

- retain the same TREE RECORD NUMBER recorded at the previous inventory
- record CO-LOCATED MICROPLOT TREE STATUS = 1
- record the required items listed below in this supplement

For live saplings that are on both the previous co-located and the new off-set microplots:

- retain the same TREE RECORD NUMBER recorded at the previous inventory
- record PRESENT TREE STATUS = 1, and record CO-LOCATED MICROPLOT TREE STATUS = 1
- record the required sapling tally items in Section 5.0
- be sure to get an azimuth and distance to the new off-set microplot

For live stems on the co-located microplot that were recorded as saplings at the previous inventory and have grown to 5.0 inches or greater since the previous inventory:

- retain the same TREE RECORD NUMBER recorded at the previous inventory
- record PRESENT TREE STATUS = 1, and record CO-LOCATED MICROPLOT TREE STATUS = 1 record the required tree tally items described in Section 5.0
- be sure to get an azimuth and distance to subplot center

THROUGH GROWTH TREES

For live stems on the co-located microplot that were seedlings at the previous inventory and have grown to 5.0 inches or greater since then:

- record the next available TREE RECORD NUMBER
- record PRESENT TREE STATUS = 1
- record CO-LOCATED MICROPLOT TREE STATUS = 1
- record NEW TREE RECONCILE = 2 (through growth)
- record the required tree tally items described in Section 5.0
- be sure to get an azimuth and distance to subplot center

MISSED TREES

Be wary of recording saplings as missed trees. Unless it is obvious that the previous cruiser was in error, give the benefit of the doubt. However, if it is determined that the tree definitely should have been tallied as a sapling at the previous inventory but was not tallied, then do the following:

- record the next available TREE RECORD NUMBER
- record CO-LOCATED MICROPLOT TREE STATUS = 1 if alive
- also record PRESENT TREE STATUS = 1 if alive AND ≥ 5.0 in DBH
- record CO-LOCATED MICROPLOT TREE STATUS = 2 if dead
- also record PRESENT TREE STATUS = 2 if dead AND ≥ 5.0 in DBH
- record NEW TREE RECONCILE = 3 (missed)
- if tree is less than 5.0 inches, record the required items listed in this supplement
- if tree is 5.0 inches or greater, then record the required items listed in Section 5.0

DEAD STEMS

For dead stems that were recorded as live saplings at the previous inventory and are currently less than 5.0 inches DBH:

- retain the same TREE RECORD NUMBER recorded at the previous inventory
- record CO-LOCATED MICROPLOT TREE STATUS = 2
- record the required items listed in this supplement

For dead stems on the co-located microplot that were recorded as live saplings at the previous inventory but are currently 5.0 inches or greater:

- retain the same TREE RECORD NUMBER recorded at the previous inventory
- record PRESENT TREE STATUS = 2
- record CO-LOCATED MICROPLOT TREE STATUS = 2
- record the required tree tally items described in Section 5.0

REMOVAL TREES

- retain the same TREE RECORD NUMBER recorded at the previous inventory
- record CO-LOCATED MICROPLOT TREE STATUS = 3
- record the required items listed in this supplement

MISSING SAPLINGS

If a live sapling has been physically moved off the co-located microplot, and is not now on the off-set microplot (or the subplot if ≥ 5.0 inches DBH), then:

- record CO-LOCATED MICROPLOT TREE STATUS = 4
- record the required items listed below in this supplement

If a live sapling has been physically moved off the co-located microplot, is still less than 5.0 inches DBH, and is now on the new off-set microplot:

- record CO-LOCATED MICROPLOT TREE STATUS = 4
- record PRESENT TREE STATUS = 1
- record the required tree tally items described in Section 5.0

If a live sapling has moved off the co-located microplot, has grown up to 5.0 inches or greater, and is now on the subplot:

- record CO-LOCATED MICROPLOT TREE STATUS = 4
- record PRESENT TREE STATUS = 1
- record NEW TREE RECONCILE = 1.
- record the required tree tally items described in Section 5.0

If a sapling has grown up to 5.0 inches or greater, has been physically moved off the co-located microplot, is now on the subplot, but has since died:

- record CO-LOCATED MICROPLOT TREE STATUS = 4
- record PRESENT TREE STATUS = 2
- record the required tree tally items described in Section 5.0

DATA RECORDED

Record the following tree level variables on the co-located microplot tally:

ITEM R501 ENTRY NUMBER
ITEM 5010 MICROPLOT NUMBER
ITEM 5020 TREE RECORD NUMBER
ITEM 5030 CONDITION CLASS NUMBER
ITEM R507 CO-LOCATED MICROPLOT TREE STATUS
ITEM 5061 NEW TREE RECONCILE
ITEM 5080 SPECIES
ITEM 5092 DIAMETER AT BREAST HEIGHT
ITEM 5091 PREVIOUS DIAMETER AT BREAST HEIGHT
ITEM 5100 DIAMETER CHECK
ITEM 5230 LENGTH TO DIAMETER MEASUREMENT POINT
ITEM R503 TREE CLASS
ITEM 5120 TOTAL LENGTH
ITEM 5130 ACTUAL LENGTH
ITEM 5140 LENGTH METHOD
ITEM 5190 CAUSE OF DEATH
ITEM 5200 MORTALITY YEAR
ITEM 5220 UTILIZATION CLASS
ITEM 5260 TREE NOTES

ITEM R501 ENTRY NUMBER

The entry number is pre-printed on tally sheets and is automatically created in Excel. If an entry is crossed out or omitted for any reason, subsequent entry numbers must be manually renumbered.

When collected: All reamasurement saplings on the collected microplot

Field width: 3 digits

Values: 001 to 999

ITEM 5010 MICROPLOT NUMBER (CORE 5.01)

Record the microplot number where the tree occurs.

When Collected: All remeasurement saplings on the co-located microplot

Field width: 1 digit

Values:

- 1 Center subplot
- 2 North subplot
- 3 Southeast subplot
- 4 Southwest subplot

ITEM 5020 TREE RECORD NUMBER

Record the tree number assigned at the previous visit. Do not renumber trees in order to assign a more “correct” tree number to a missed tree and to trees that have grown onto the subplot. If the previous tree number was a two-digit code, change it to a three-digit code by placing a zero in front of it. Record 999 for co-located microplots that have no past tree tally. If a sapling is on both the co-located and the new off-set microplot, add 900 to the previous tree number.

When Collected: All remeasurement saplings on the co-located microplot

Field width: 3 digits

Values: 001 to 999

ITEM 5030 CONDITION CLASS NUMBER (CORE 5.03)

Record the condition class number in which each tree is located. Often, a referenced boundary is approximate, and trees selected for tally are assigned to the actual condition in which they lie regardless of the recorded approximate boundary (Figure 9).

When Collected: All remeasurement saplings on the co-located microplot

Field width: 1 digit

Values: 1 to 9

ITEM R507 CO-LOCATED MICROPLOT TREE STATUS

Record a current tree status code for each tree on the co-located microplot.

When Collected: All remeasurement saplings on the co-located microplot

Field width: 1 digit

Values:

- 0 No status -- tree is not presently in the sample (remeasurement plots only). Tree was incorrectly tallied at the previous survey or currently is not tallied due to definition or procedural change.
- 1 Live tree -- any live tree (remeasured or missed)
- 2 Dead tree -- any mortality tree, regardless of cause of death, which does not qualify as a removal.

- 3 Removal - a tree that has been cut or killed by direct human activity related to harvesting, silviculture or land clearing. The tree may, or may not, have been utilized. Only code trees killed by fire as removals if it was a prescribed burn.
- 4 Missing – tree was tallied in previous inventory but now is missing due to natural causes such as landslide, fire, etc.

ITEM 5061 NEW TREE RECONCILE (CORE 5.6.1)

Record a NEW TREE RECONCILE for new tally trees on the co-located microplot that were less than 1.0 inch on the previous inventory and now are 5.0 inches or greater, or for saplings that were missed on the last inventory.

Be wary of recording saplings as missed trees. Unless it is obvious that the previous cruiser was in error, give the benefit of the doubt.

When Collected: On the co-located microplot; present DBH \geq 5.0 inches and past DBH $<$ 1.0 inch, and on missed live saplings

Field width: 1 digit

Values:

- 2 Through growth – new tally tree 5 inches DBH and larger, within the remeasured co-located microplot.
- 3 Missed live – a live tree on the remeasured co-located microplot missed at previous inventory and that is live, dead or removed now.

ITEM 5080 SPECIES (CORE 5.08)

Record the appropriate SPECIES code from the list in Appendix 3. If you encounter a species not listed in Appendix 3 and are not sure if it should be tallied as a tree, consult your Field Supervisor. If the species cannot be determined in the field, tally the tree, but bring branch samples, foliage, cones, flowers, bark, etc. to your supervisor for identification. If possible, collect samples outside the subplots from similar specimens and make a note to correct the SPECIES code later. Use the generic SPECIES code only when you encounter a tree where you know tree species but the species is not on the species list.

When Collected: All tally trees

Field width: 3 digits

Values: See Appendix 3

ITEM 5092 DIAMETER AT BREAST HEIGHT (DBH) (CORE 5.09.2)

Unless one of the special situations described in Appendix 3 is encountered, measure DBH at 4.5 ft above the ground line on the uphill side of the tree. Round each measurement down to the last 0.1 inch. For example, a reading of 3.68 inches is recorded as 3.6 inches.

When remeasuring the diameter of a tree tallied at a previous survey, always take the measurement at the location monumented by the previous crew unless it is not physically possible (e.g., tree buried by mudslide), or the previous location is more than 12 inches beyond where the diameter should be measured according to current protocols (either because protocols have changed or the previous crew made a mistake). Assign a DIAMETER CHECK code of 2 whenever the point of measurement is moved.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 1
Field width: 3 digits (xx.y)
Values: 010 to 999

ITEM 5091 PREVIOUS DIAMETER AT BREAST HEIGHT (CORE 5.09.1)

This is the DBH assigned at the previous survey. It has been downloaded from the previous inventory onto the data recorder and/or on hardcopy.

When collected: All remeasurement tally trees
Field width: 3 digits (xx.y)
Values: 010 to 049

ITEM 5100 DIAMETER CHECK (CORE 5.10)

Record this code to identify any irregularities in diameter measurement positions (e.g., abnormal swellings, diseases, damage, new measurement positions, etc.) that may affect use of this tree in diameter growth/change analyses. Use code 2 for remeasurement trees only.

Note: If both codes 1 and 2 apply, use code 2.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 1
Field width: 1 digit
Values:

- 0 Diameter measured accurately
- 1 Diameter estimated, or tree shrunk due to bark slough by less than 0.2 inch
- 2 Diameter measured at different location than previous measurement; the previous diameter was estimated and the current diameter is measured accurately; previous diameter is obviously incorrect; or the tree shrunk by more than 0.2 inch or more

ITEM 5230 LENGTH TO DIAMETER MEASUREMENT POINT (CORE 5.23)

For those trees measured directly at 4.5 ft above the ground, leave this item blank. If the diameter is not measured at 4.5 ft, record the actual height from the ground, to the nearest 0.1 ft, at which the diameter was measured for each tally tree, 1.0 in DBH and larger.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 1
Field width: 3 digits
Values: 001 – 150

ITEM R503 TREE CLASS

Record the code that indicates the tree class. All palm species are code 3.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 1 and all mortality trees = 5.0 in DBH

Field width: 1 digit
Values:

- | | |
|---|-------------------------|
| 2 | Potential growing stock |
| 3 | Rough cull |
| 4 | Rotten cull |

ITEM 5120 TOTAL LENGTH (CORE 5.12)

Record the TOTAL LENGTH of the tree, to the nearest 1.0 ft from ground level to the tip of the apical meristem. For trees growing on a slope, measure on the uphill side of the tree. If the tree has a broken or missing top, estimate what the total length would be if there were no missing or broken top. Forked trees should be treated the same as unforked trees.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 1
Field width: 3 digits
Values: 005 to 400

ITEM 5130 ACTUAL LENGTH (CORE 5.13)

For trees with broken or missing tops, record the ACTUAL LENGTH of the tree to the nearest 1.0 ft from ground level to the highest remaining portion of the tree still present and attached to the bole. If the top is intact, this item may be omitted. Forked trees should be treated the same as unforked trees.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 1
Field width: 3 digits
Values: 005 to 400

ITEM 5140 LENGTH METHOD (CORE 5.14)

Record the code that indicates the method used to determine tree lengths. Instruments are to be used on all trees when possible. Do not measure a few trees on the subplot and then estimate the rest visually. Only estimate length when it is not possible to accurately measure it with an instrument.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 1

Field width: 1 digit

Values:

- 1 Total and actual lengths are field measured with a measurement instrument (e.g., clinometer, relascope, tape)
- 2 Total length is visually estimated, actual length is measured with an instrument
- 3 Total and actual lengths are visually estimated

ITEM 5190 CAUSE OF DEATH

Record a cause of death for all trees that have died or been cut since the previous survey. If cause of death cannot be reliably estimated, record unknown/not sure.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 2or 3

Field width: 2 digits

Values:

- | | | | |
|----|---------|----|--------------------------------|
| 10 | Insect | 60 | Vegetation (suppression, |
| 20 | Disease | | competition, vines/kudzu) |
| 30 | Fire | 70 | Unknown/not sure/other |
| 40 | Animal | 80 | Human |
| 50 | Weather | 90 | Physical (hit by falling tree) |

ITEM 5200 MORTALITY YEAR (CORE 5.20)

Record the estimated year that remeasured trees died or were cut. For each remeasured tree that has died or been cut since the previous inventory, record the 4-digit year in which the tree died. Mortality year is also recorded for trees on land that has been converted to a nonforest land use, if it can be determined that a tree died before the land was converted.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 2or 3

Field width: 4 digits

Values: 19xx or higher

ITEM 5220 UTILIZATION CLASS (CORE 5.22)

Record the code to identify cut trees that have been removed from the site.

When Collected: CO-LOCATED MICROPLOT TREE STATUS = 1 or 3

Field width: 2 digits

Values:

- 00 Not utilized - can still be found on the site, or, if not actually found on the site, the cruiser estimates that due to past DBH, species, or from other information, that the tree was not removed from the site for use as a product, either commercially or non-commercially.
- 11 Commercial utilization – some portion of the tree removed for commercial purposes. Commercial uses include sawlogs, pulpwood, veneer logs, poles, and other products such as firewood cut by commercial firewood operations.
- 12 Non-commercial utilization – some portion of the tree removed for non-commercial purposes. Non-commercial uses include domestic firewood use, barn poles, fence posts, domestic landscaping, rough slabs, etc.

Trees that have been cut above 4.5 ft (“jump-butt”) due to a fence or defect are tallied if still standing at 4.5 ft. If the tree is still alive at DBH, then record TREE STATUS = 1 and then record UTILIZATION = 11 or 12. If it is dead at DBH, then record TREE STATUS = 2 and UTILIZATION = 11 or 12. However, this does NOT apply to naturally swell-buttred trees where it is normal to cut above 4.5 ft. Continue to code those trees as removals (TREE STATUS 3) if cut below the diameter point and then code UTILIZATION = 11 or 12.

ITEM 5260 TREE NOTES (CORE 5.26)

Record notes pertaining to an individual tree as called for to explain or describe another variable.

When collected: All live and dead tally trees

Field width: Alphanumeric character field

Values: English language words, phrases and numbers